

## NAVY DEPARTMENT

## BUREAU OF ORDNANCE

25

WASHINGTON, D. C.

NAVORD OCL AV14-44  
31 May 1944F41-6(1)  
(Mn2d)**RESTRICTED**

## BUREAU OF ORDNANCE CIRCULAR LETTER AV14-44

Subject: 100-lb. Cluster, M28, and 500-lb. Cluster, M29, of 4-lb. Fragmentation Bombs, M83 - Tactical use and flight preparation of.

Enclosures: (A) Bomb Frag., M83 (formerly T11), fuze and collapsed - Photo of.  
(B) Cluster, 100-lb., M28 (formerly T10) - Photo of.  
(C) Cluster, 500-lb. M29 - Photo of.  
(D) Bomb Frag., M83 (formerly T11), open - Photo of.  
(E) Bomb Fuze, M129 (formerly T47) - Photo of.

1. This letter is for the reference of all personnel concerned with the tactical use and flight preparation of clusters, fragmentation bomb, M28 and M29.

2. General: Bomb, fragmentation, 4-lb., M83, enclosure (A), is for use in 100-lb. and 500-lb. clusters. It has a cylindrical body,  $3\frac{1}{4}$ " long and 3" diameter, and contains 7 ounces of TNT. Two spring-activated semi-cylindrical case sides and two canted, spring-activated case ends are folded down over the body when clustered. This bomb may be fuze with the M129, M130, or M131 fuze to which is attached the cable assembly. The 100-lb. cluster, M28, enclosure (B), consists of a cluster adapter, M15, housing 24 bombs, M83, all fuze with one type fuze, and collapsed. Each cluster, less the M11A2 fuze, is packed completely assembled in a wooden box having an inner metal container. The total shipping weight is 167 pounds. The 500-lb. cluster, M29, enclosure (C), will house 90 bombs completely fuze and collapsed. Unlike the 100-lb. cluster, the M29 cluster will be shipped empty; the bombs will be shipped

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in a "wafer" (cluster section) of ten bombs. A "wafer" is ten M83 bombs all fuzeed with the same fuze and packed adjacent to one another so that the case sides and case ends are kept closed by the contact. Each section is bound with a metal strap and packed in a flat metal container. Nine sections are required to fill the cluster adapter, and any desired combination of fuzeing may be obtained by varying the sections. The opening of the cluster is controlled by the M111A2 mechanical time fuze, which is used with both the M28 and M29 clusters, and can be pre-set at a selected time between 5 and 92 seconds.

3. Flight Preparation: Clusters, 100-lb. M28, and 500-lb. M29, are prepared for use as follows:

- (a) The 500-lb. cluster adapter must be loaded with the nine sections of bombs in a manner that will insure their falling out correctly (instructions for correct loading are included in each wafer). The 100-lb. cluster is received loaded.
- (b) Remove suspension lug protectors.
- (c) Thread arming wire (.036" diameter) through the forward suspension lug.
- (d) Install cluster in aircraft.
- (e) Screw home the pre-set M111A2 nose fuze.
- (f) Insert arming wire through hole in arming pin and then through the arming vane. Attach one safety clip. Remove sealing wire, safety cotter pin, and striker stop.
- (g) Disassembly: if not dropped, the above steps will be reversed and the cluster be returned to stowage.

## 4. Functioning:

(a) When released armed, the arming wire is pulled free of the fuze allowing the vanes to rotate. Upon elapse of pre-set time, the fuze detonates the burster charge blowing open the cluster cover and allowing the bombs to drop out.

(b) The case sides and case ends spring open (enclosure (D)) when the bombs fall free. The entire

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outer case assembly slides back and engages the stop at the end of the cable assembly. The cup-like case sides retard the fall, while the canted case ends cause counter-clockwise rotation of the outer case assembly and cable assembly thereby initiating the arming of the fuze. The action upon unscrewing the cable assembly from:

- (1) The M129 fuze is a complete arming of the fuze for either air burst after 2 to 2.2 seconds or detonation on impact, depending on setting, enclosure (E). (M129 fuze was formerly the T47).
- (2) The M130 fuze is a complete arming for detonation of the bomb after the expiration of an interval of time of from 3 to 30 minutes depending on the setting. These fuzes are pre-set during manufacture. (M130 fuze was formerly the T48).
- (3) The M131 fuze is a first stage arming. Further and complete arming is attained on impact. Detonation will be effected upon any further movement of bomb. (M131 fuze was formerly the T49).

(c) If cluster is released safe, the arming wire is released with the fuze and prevents its arming. Being unarmed, the fuze does not function in the air, but will probably crush and function on impact. The individual bomb fuzes will not ordinarily arm under these circumstances.

## 5. Tactical Limitations

(a) To achieve a varied effect in a designated area, salvo release of 100-lb. clusters, M28, in multiples of three with each cluster fuze differently is recommended.

(b) The air burst setting of the M129 fuze is not used. The accuracy of the M11A2 is only to the

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closest 300 feet of the calculated setting; the 2 to 3 seconds required to set off the bomb in air will cause it to burst too high to be effective.

(c) The use of the M131 fuze is not recommended in areas that are expected to be occupied by friendly ground forces as they constitute a potential "booby trap".

(d) Altitude Limitations are:

Upper Limit - 5000 feet with 8 seconds setting (M111A2) Fuze

Above this altitude or at a shorter delay than 8 seconds at this altitude will result in a scattering of the bombs to such an extent that there will be no coverage of the target.

Lower Limit - 2000 feet with 5 seconds setting on M111A2 Fuze

At a lower release altitude, the cluster will not open in time to arm the individual bomb fuzes.

(e) The pattern of fall for the 100-lb. cluster, M28, is approximately 150 feet wide and 260 feet long for the limits in paragraph (d) above.

6. Precautions:

(a) 100-lb. cluster, M28, is packed for use and requires only the assembly of fuze, nose, M111A2. Do not attempt to disassemble cluster or any of the bomb components.

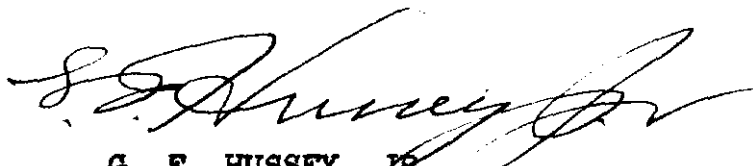
(b) The M111A2 fuze should not be set to open the cluster any later than approximately 5000 feet of fall (about 14 seconds) because at a greater fall, the cluster velocity may cause structural failure of the "butterfly" wings.

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(c) These clusters are safe for take-offs and landings anywhere.

  
G. F. HUSSEY, JR.  
Rear Admiral, U.S. Navy  
Chief of Bureau

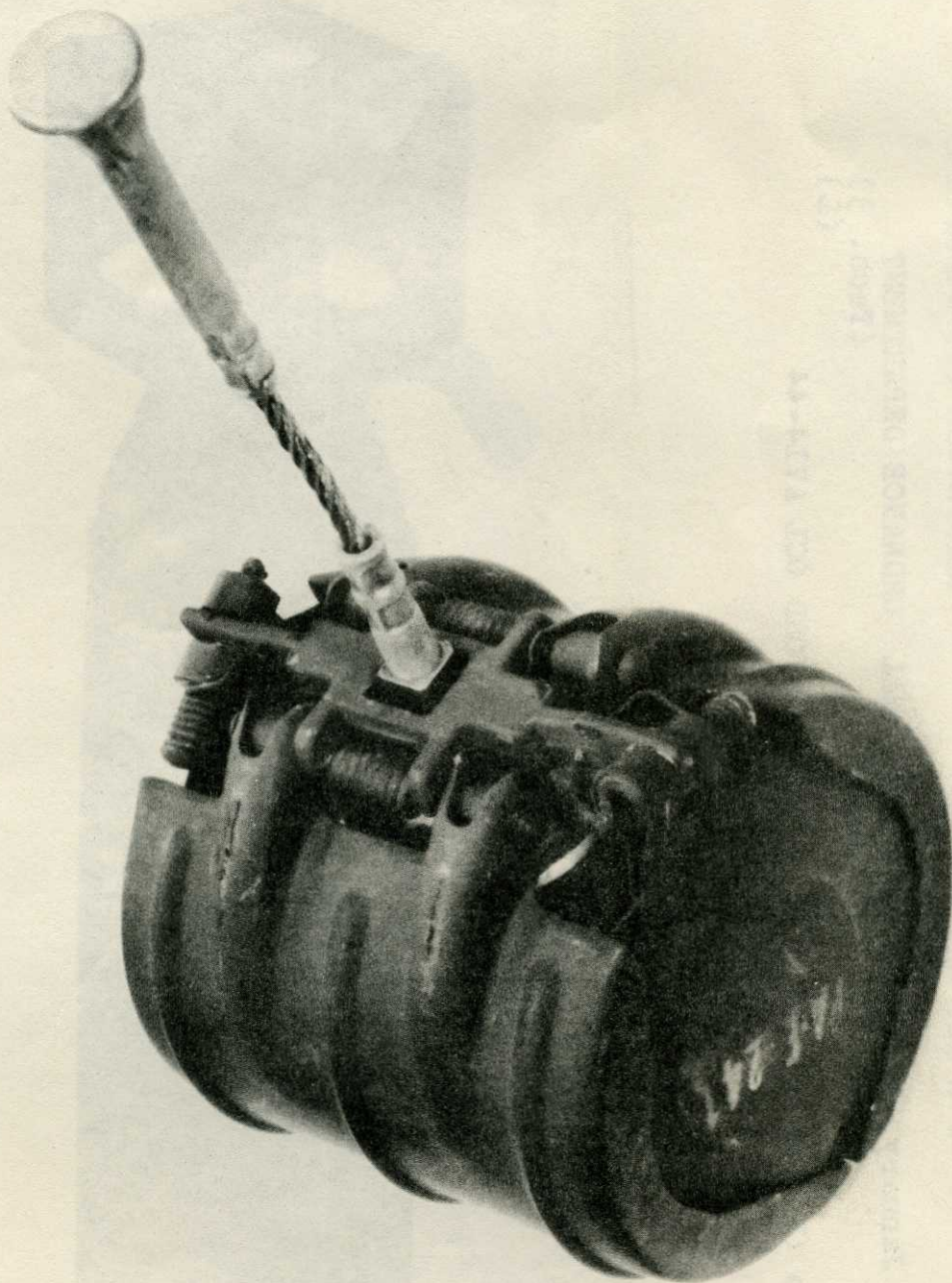
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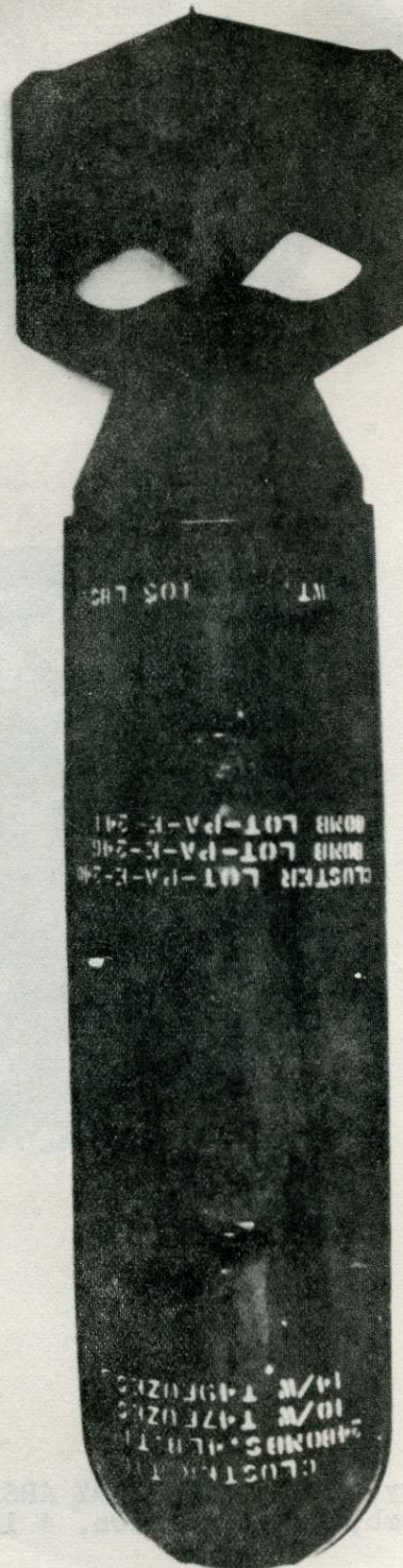
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M-20491 January, 1944 PICATINNY ARSENAL ORDNANCE DEPARTMENT  
Bomb, Fragmentation, 4 lb., T11 (Closed) (Tech. 3)  
Enclosure (A) RESTRICTED NAVORD OCL AV14-44 (T)

M-20484 January, 1944 PICATINNY ARSENAL ORDNANCE DEPARTMENT  
Cluster, T10 (Tech. 3)  
(L)

Enclosure (B) RESTRICTED



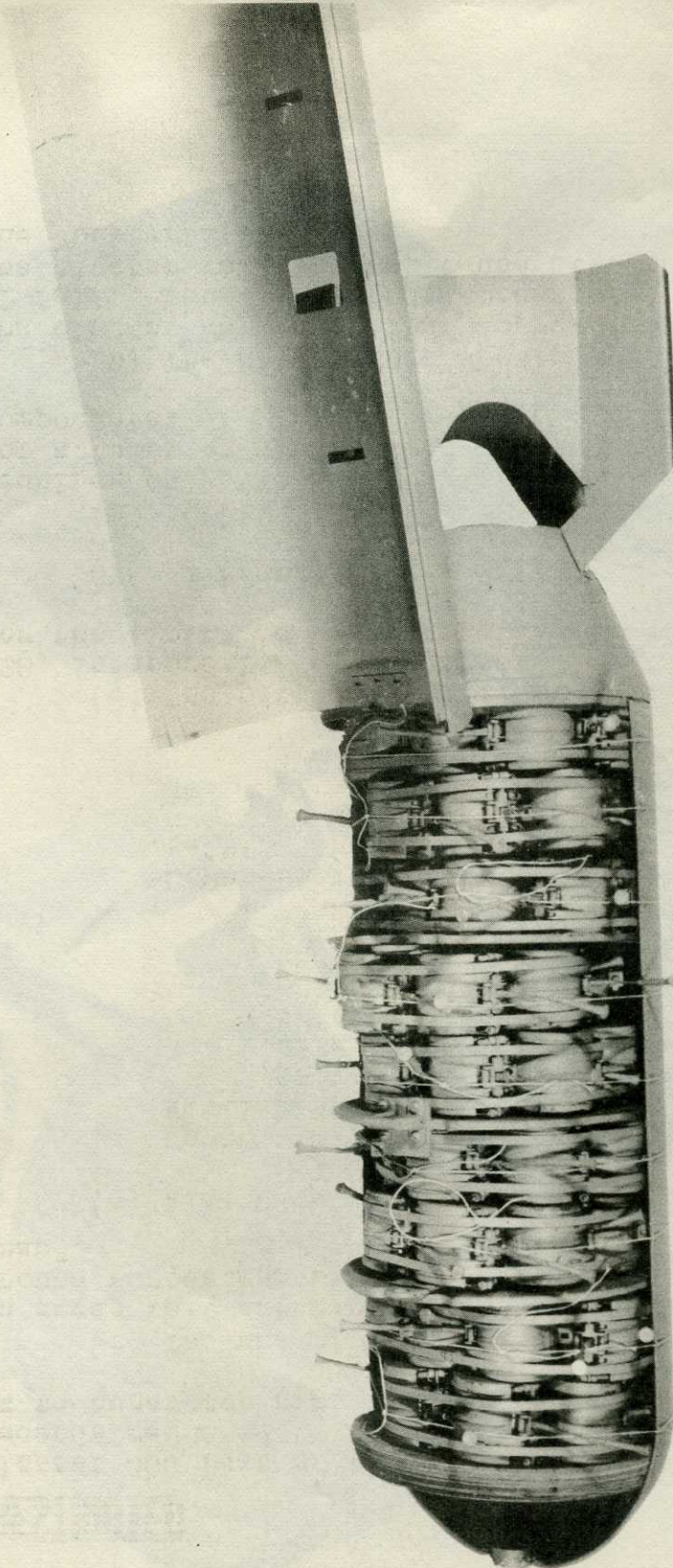
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By PT NARA Date 3-11-06

M-21407 February, 1944 PICATINNY ARSENAL ORDNANCE DEPARTMENT

(Tech. 5)  
(L)

Cluster, T11, Loaded with Nine Wafers of  
10 Bombs, Frag. 4 lb., T11 each  
Enclosure (C) RESTRICTED NAVORD OCL AV14-44



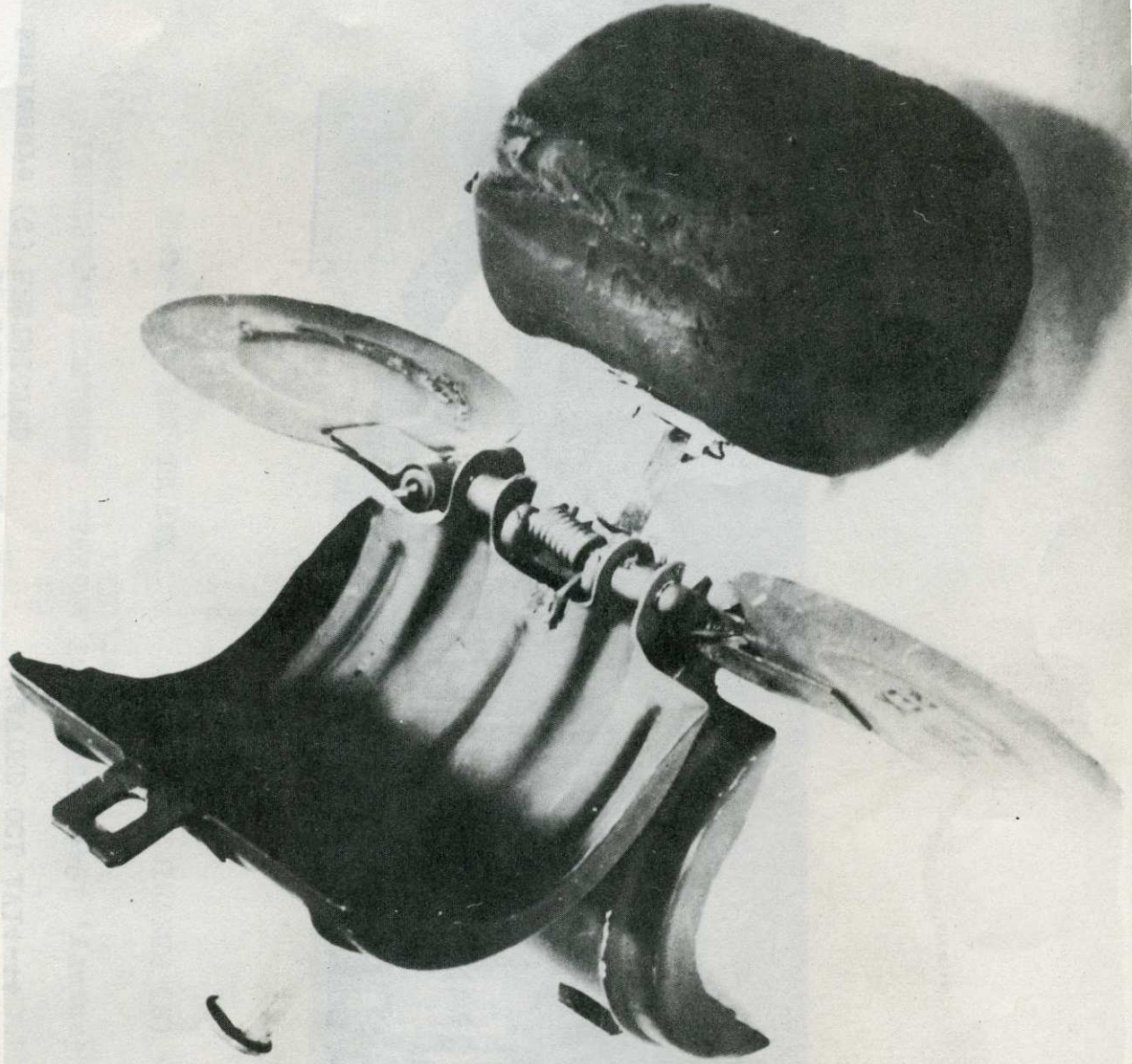
M-20490 January, 1944 PICATINNY ARSENAL ORDNANCE DEPARTMENT

(Techr. 3)  
(L)

Bomb, Fragmentation, 4 lb., T11  
(Open)

Enclosure (D) RESTRICTED

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By PT NARA Date 3-11-06

M-20485 January, 1944 PICATINNY ARSENAL ORDNANCE DEPARTMENT

(Tech. 3)  
(L)

Enclosure (E) RESTRICTED

Fuze, Bomb, T47

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